bonding of the IC chip 1 to the board 4.

Therefore, when the inorganic filler 6f of the same weight is mixed, the amount of moisture absorption to the periphery of the inorganic filler 6f can be reduced by employing a larger inorganic filler 6f that has a mean particle diameter of not smaller than 3 μm, and this allows the moisture resistance to be improved. Moreover, the inorganic filler of a larger mean particle diameter (in other words, average grain size) is generally less expensive, and this is preferable in terms of cost. As shown in Fig. 59A, according to the processing method that employs the ACF (Anisotropic Conductive Film) 598 for the bonding of the IC chip 1 to the board 4, it is required to place conductive particles 599 in the ACF 598 between the bump 3 and the board electrode 5 without fail. However, since no conductive particle exists in the aforementioned embodiment of the present invention, there is no need for doing so. As shown in Fig. 59B, the bump 3 is pressure-bonded to the board electrode 5 while being crushed by the electrode 5, and therefore, the inorganic filler 6f also slips out of the space between the bump 3 and the board electrode 4 together with the insulating resin layers 6 and 306b between the bump 3 and the board electrode 4. On the basis of the feature that there is almost no hindrance of conductivity by virtue of the placement of the unnecessary

inorganic filler 6f between the board electrode 4 and the bump 3, an inorganic filler 6f of a large mean particle diameter of not smaller than 3 μm can be employed.

(Twenty-Fourth Embodiment)

A method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and an electronic component unit or module of, for example, a semiconductor device in which the IC chip is mounted on the board by the mounting method, according to a twenty-fourth embodiment of the present invention will be described next with reference to Fig. 60 and Fig. 26. Fig. 60 and Fig. 26 are a schematic sectional view of a bonded state produced by the method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and a partially enlarged schematic sectional view of a resin sheet 6 employed in the above case, according to the twenty-fourth embodiment. According to this twenty-fourth embodiment, the inorganic filler 6f to be mixed with the insulating resin 306m of the insulating resin layers 6 and 306b in each of the aforementioned embodiments is provided by inorganic fillers 6f-1 and 6f-2, which have a plurality of different mean particle diameters. As a concrete example, an inorganic filler having a mean particle diameter of 0.5 μm and an inorganic filler having a mean particle diameter of 2 to 4 μm are employed.

According to the twenty-fourth embodiment, by mixing the insulating resin 306m with the inorganic fillers 6f-1 and 6f-2, which have the plurality of different mean particle diameters, the amount of the inorganic filler 6f to be mixed with the insulating resin 306m can be increased, and the amount of moisture absorption to the periphery of the inorganic filler can be reduced. This enables the improvement in the moisture resistance and facilitates the film formation (solidification). That is, in terms of percentage by weight, the amount of the inorganic filler per unit volume can be increased when inorganic fillers of different particle diameters are mixed rather than when one type of inorganic filler is employed. This enables the increase in amount of the inorganic filler 6f to be mixed with the resin sheet 6 or the adhesive 306b that serves as an encapsulation sheet and enables the reduction in the coefficient of linear expansion of the resin sheet 6 or the adhesive 306b, allowing the operating life to be increased for the improvement of reliability.

(Twenty-Fifth Embodiment)

Next, according to a method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and an electronic component unit or module of, for example, a semiconductor device in which the IC chip is mounted on the board by the mounting method,